

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A process for producing ethane, ~~which comprises~~ consistently essentially of bringing methane ~~used only as an initial alkane~~ into contact with a metal catalyst selected from the group consisting of metal hydrides, metal organic compounds and mixtures thereof.
2. (Previously Presented) The process according to claim 1, wherein the metal catalyst comprises at least one metal selected from the group consisting of lanthanides, the actinides and the metals from Groups 2 to 12 of the Periodic Table of the Elements.
3. (Currently Amended) A process for the conversion of methane to carbon-containing products, ~~comprising~~ consisting essentially of bringing methane ~~used only as an initial alkane~~ into contact with a metal catalyst comprising at least one metal selected from the group consisting of lanthanides, the actinides and the metals from Groups 2 to 12 of the Periodic Table of the Elements, so as to produce ethane in a proportion of at least 65% by weight with respect to carbon-containing products formed in the process.
4. (Previously Presented) The process according to claim 3, wherein the ethane is produced in a proportion of at least 70% by weight with respect to carbon-containing products formed in the process.

5. (Previously Presented) The process according to claim 3 or 4, wherein the metal catalyst is selected from the group consisting of metal hydrides, metal organic compounds and mixtures thereof.

6. (Previously Presented) The process according claim 1 or 3, wherein the process is carried out under conditions involving a non-oxidative coupling of methane.

7. (Cancelled).

8. (Currently Amended) The process according to claim 1 or 3₁ wherein the process is a single-stage process.

9. (Currently Amended) The process according to claim 1 or 3₁ wherein the process is carried out with operating conditions maintained substantially constant during the ethane production.

10. (Currently Amended) The process according to claim 1 or 3₁ wherein the process is carried out under a total absolute pressure ranging from 10^{-3} to 100 MPa.

11. (Currently Amended) The process according to claim 1 or 3₁ wherein the process is carried out at a temperature ranging from -30°C to +800°C.

12. (Currently Amended) The process according to claim 1 or 3₁ wherein the process is carried out in the presence of one or more inert agents.

13. (Currently Amended) The process according to claim 1 or 3₁ wherein the metal catalyst is supported on a solid support.

14. (Previously Presented) The process according to claim 13, wherein the solid support is selected from the group consisting of metal oxides, refractory oxides,

molecular sieves, sulphated metal oxides, sulphated refractory oxides, metal sulphides, refractory sulphides, sulphided metal oxides, sulphided refractory oxides and azides.

15. (Currently Amended) The process according to claim 1 or 3, wherein the metal of the metal catalyst is at least one metal selected from the group consisting of yttrium, scandium, lanthanum, titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, tungsten, rhenium, iron, ruthenium, cobalt, rhodium, iridium, nickel, palladium, platinum, cerium and neodymium.

16. (Previously Presented) The process according to claim 15, wherein the metal is at least one metal selected from the group consisting of yttrium, titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, tungsten, ruthenium, rhodium and platinum.

17. (Previously Presented) The process according to claim 16, wherein the metal is at least one metal selected from the group consisting of yttrium, vanadium, niobium, tantalum, chromium, molybdenum, tungsten, ruthenium, rhodium and platinum.

18. (Currently Amended) The process according to claim 1 or 3, wherein the process is carried out in the gas phase in a reactor.

19. (Previously Presented) The process according to claim 18, wherein the metal catalyst is used in a solid form, essentially forming the bed of the reactor.

20. (Previously Presented) The process according to claim 1 or 3, wherein the process comprises adding the methane to the metal catalyst, or adding the metal catalyst to the methane, or simultaneously mixing the methane and the metal catalyst.